

There are essentially two minor changes worth commenting on. First, in response to the Examiner's indefiniteness rejection, the phrase "can bind" has been changed to "binds" in pending claims 48, 50, 57, 60, 61, 62, and 65, formerly numbered respectively as claims 25, 27, 34, 37, 38, 40, and 44. Second, former claim 41 has been deleted. Otherwise, there are no substantive claim changes and the scope of the existing changes do not require a new search. (Applicants note that although the redlined document seems to indicate SEQ ID NO: 2, careful observation of the various SEQ ID NO: 2's in the claims reveal that they have not been changed. There are a few minor informalities, e.g. glycopolypeptide is misspelled in claim 57, which applicants will correct in a subsequent amendment.)

Therefore, as the claims were already searched and acted upon in the final Office Action, dated January 15, 2002, the Examiner cannot demonstrate that searching the claims would be a burden.

**There is only one claimed sequence**

As previously noted in applicants' response with traverse dated October 29, 2001, the only sequence identification number recited in the claims is SEQ ID NO 2. Therefore, even if the Examiner were to search the claims a second time, no argument exists that more than one sequence is present, and therefore, the search is not burdensome.

**The Examiner has Admitted the Classification for All Claims is Identical**

The Examiner has admitted that all groups can be searched within the same classes and subclasses: 530/322 and 530/395. Furthermore, the Examiner's claim that Groups II and III do not require a carbohydrate component is misguided. All of the claims of these Groups recite a glycopolypeptide, which by definition is a glycosylated peptide, i.e. a carbohydrate-peptide molecule. Again, the Examiner has failed to present factual evidence of a proper restriction, and applicants request withdrawal of the restriction requirement between Groups I, II, and III.

**CONCLUSION**

Receipt of the initial Office Action on the merits is awaited.

If any additional extension(s) of time are required for the filing of this paper, applicants expressly petition for such extension(s) and authorize the Commissioner to charge any deficiency to Deposit Account 19-0741.

Respectfully submitted,

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## **APPENDIX I**

(Document comparison of the pending claims with the claims canceled by the preliminary amendment filed concurrently with the CPA dated June 17, 2002.)



Application No. 09/252,828

~~[25-]~~48. (New) A purified recombinant glycopolypeptide of 65kd to 100kd that comprises approximately 40% to 60% carbohydrate by weight and that ~~[can bind]~~binds human spermatozoa at least 10 times as strong as an equivalent molar amount of mouse ZP3.

~~[26-]~~49. (New) The glycopolypeptide according to claim ~~[25,]~~48, wherein the glycopolypeptide is expressed by a human ovarian cell line.

50. ~~[27-]~~~~[(Once)New]~~ ~~[Amended]~~—A purified recombinant glycopolypeptide having between 41 and 400 amino acids and having an active portion that ~~[can bind]~~binds human spermatozoa at least 10 times as strong as an equivalent molar amount of mouse ZP3, wherein the active portion comprises an amino acid sequence that is more than 54% homologous with SEQ ID NO: 2 and has a predicted O-glycosylation site at a serine that corresponds to position 344 of the human ZP3 sequence.

51. ~~[28-]~~~~[(Twice)New]~~ ~~[Amended]~~—A glycopolypeptide according to claim ~~[27,]~~50, comprising a sequence from position 310 to position 345 of SEQ ID NO: 2 wherein at least one amino acid at a position selected from the group consisting of: (a)310; (b)320; (c)323; (d)326; (e)328; (f)329; (g)332; (h)334; (i)335; (j)337; (k)339; (l)341; (m)342 and (n)345 is substituted while preserving the human-species specific glycosylation pattern of the glycopolypeptide.

52. ~~[29-]~~~~[(Once)New]~~ ~~[Amended]~~—The glycopolypeptide according to claim ~~[27,]~~50, wherein the amino acid sequence of the active portion is more than 75% identical with SEQ ID NO: 2.

~~[-30-]~~53. (New) The glycopolypeptide according to claim ~~[28,]~~51, having between 41 and 300 amino acids.

~~[-31-]~~54. (New) The glycopolypeptide according to claim ~~[28,]~~51, having between 41 and 200 amino acids.

~~[32-]~~55. (New) The glycopolypeptide according to claim ~~[28,]~~51, having between 41 and 100 amino acids.

~~[33-]~~56. (New) The glycopolypeptide according to claim ~~[28,]~~51, having between 41 and 65 amino acids.

~~57.~~ ~~[34-]~~(New) ~~[Amended]~~—A purified recombinant glycopolypeptide of 65kd to 100kd that comprises 40% to 60% carbohydrate by weight and that ~~[can bind]~~binds human spermatozoa at least 10 times as strong as an equivalent molar amount of mouse ZP3, wherein the ~~[glycopolypeptide]~~glycopolopeptide is obtainable by a process comprising the steps of:

- (a) ~~(a)~~ [transducing a cell from a human ovarian cell line with a polynucleotide that encodes a polypeptide comprising a sequence that is more than 54% homologous with SEQ ID NO: 2;
- (b) ~~(b)~~ [establishing a stable-transfected cell culture for producing the glycopolypeptide; and
- (c) ~~(c)~~ [isolating the glycopolypeptide from the cell culture.

~~[35-]~~58. New The purified glycopolypeptide of claim ~~[34]~~57 wherein the ovarian cell line of step (a) is selected from the group consisting of PA-1, EB2, CaoV-3, ~~[CaoV]~~Cao V-~~[4,]~~4 OVCAR-3, ~~[SK-OV]~~SKOV-3, and SW 626.

~~59.~~ ~~[36-]~~(New) ~~[Amended]~~—The purified glycopolypeptide of claim ~~[34,]~~57, wherein the polynucleotide of step (a) encodes a polypeptide comprising a sequence from position 310 to position 345 of SEQ ID NO: 2 wherein at least one amino acid has been altered while preserving the human-species specific glycosylation of the glycopolypeptide.

60. ~~[37-]~~(New) ~~[Amended]~~—A purified glycopolypeptide that comprises carbohydrate and that ~~[can bind]~~binds human spermatozoa at least 10 times as strong as an equivalent molar amount of mouse ZP3, wherein the amino acid sequence of the

glycopolypeptide comprises a sequence from position 310 to position 345 of SEQ ID NO: 2 wherein at least one amino acid has been altered while preserving the human-species specific glycosylation of the glycopolypeptide.

61. [ ~~38.~~ ] ( ~~Twice Amended~~ ) New A glycopolypeptide that ~~can bind~~ binds human spermatozoa at least 10 times as strong as an equivalent molar amount of mouse ZP3 wherein the polypeptide portion of the glycopolypeptide is smaller than 25kd and includes a core region having a sequence shown in SEQ ID NO: 2 wherein at least one amino acid has been altered while preserving the human-species specific glycosylation of the glycopolypeptide.

62. [ ~~40.~~ ] ( ~~Once Amended~~ ) New A glycopolypeptide having a polypeptide portion that is smaller than 10kd and which ~~can bind~~ binds human spermatozoa with greater affinity than mouse spermatozoa, wherein the glycoprotein has a sequence comprising sequence position numbers 337 to 348 of SEQ ID NO: 2.

[ ~~41. The glycopolypeptide of claim 40, wherein one or more amino acids at positions 337, 339, 341, 342 and 345 are substituted with met, iso, met, thr, asn, and lys respectively.~~ ]

[ ~~42. A~~ ] 63. (New) a purified recombinant glycopolypeptide of 65kd to 100kd that comprises approximately 40% to 60% carbohydrate by weight and that can stimulate the acrosome reaction of human spermatozoa when co-present with the spermatozoa at a concentration of less than 1 ~~ug~~ ug/ml for a time period of less than one hour.

[ ~~43.~~ ] 64. (New) The glycopolypeptide according to claim [ ~~42.~~ ] 63. wherein the glycopolypeptide is expressed by a human ovarian cell line. [ - ]

[ ~~44.~~ ] 65. (Twice Amended) New A purified glycopolypeptide of 65kd to 100kd that ~~can bind~~ binds human spermatozoa at a glycopolypeptide concentration below 1

[~~1~~] $\mu$ g/ml and induce an acrosome reaction within one hour upon binding, wherein said glycopolyptide comprises an amino acid sequence that is more than 54% homologous to the following sequence SEQ ID NO 2:

[~~SerTrpPheProValGlnGlyProAlaAspIleCysGlnCysCysAsnLysGly~~  
~~AspCysGlyThrProSerHisSerArgArgGlnProHisValMetSerGlnTrp~~  
~~SerArgSerValSer.~~]

SerTrpPheProValGlnGlyProAlaAspIleCysGlnCysCysAs  
NLysGlyAspCysGlyThrProSerHisSerArgArgGlnProHisV  
alMetSerGlnTrpSerArgSerValSer.

[~~45.~~]66. (~~Once Amended~~) New A glycopolyptide comprising between 41 and 400 amino acid that [~~can bind~~]binds human spermatozoa at a glycopolyptide concentration below 1 [~~1~~] $\mu$ g/ml and induce an acrosome reaction within one hour upon binding, wherein said glycopolyptide comprises an amino acid sequence that is at least 54% homologous to the following sequence SEQ ID NO 2:

[~~SerTrpPheProValGlnGlyProAlaAspIleCysGlnCysCysAsnLysGly~~  
~~AspCysGlyThrProSerHisSerArgArgGlnProHisValMetSerGlnTrp~~  
~~SerArgSerValSer.~~]

SerTrpPheProValGlnGlyProAlaAspIleCysGlnCysCysAs  
NLysGlyAspCysGlyThrProSerHisSerArgArgGlnProHisV  
alMetSerGlnTrpSerArgSerValSer.

and wherein the fifth amino acid residue from the carboxyl terminus of said amino acid sequence of said glycopolyptide is O-glycosylated.

[~~46.~~]67. (~~Once Amended~~) New The glycopolyptide of claim [~~45.~~]66. wherein said glycopolyptide comprises an amino acid sequence that is at least 75% homologous to the following sequence SEQ ID NO 2:

[~~SerTrpPheProValGlnGlyProAlaAspIleCysGlnCysCysAsnLysGly~~  
~~AspCysGlyThrProSerHisSerArgArgGlnProHisValMetSerGlnTrp~~  
~~SerArgSerValSer.~~]

SerTrpPheProValGlnGlyProAlaAspIleCysGlnCysCysAs  
NLysGlyAspCysGlyThrProSerHisSerArgArgGlnProHisV

alMetSerGlnTrpSerArgSerValSer.

[~~47.~~68. (~~[Twice Amended]~~New) The glycoprotein of claim [~~45,~~66, wherein the glycoprotein comprises the following amino acid sequence SEQ ID NO 2:

[~~SerTrpPheProValGlnGlyProAlaAspIleCysGlnCysCysAsnLysGlyAspCysGlyThrPro~~]

[~~SerHisSerArgArgGlnProHisValMetSerGlnTrpSerArgSerValSer-~~]

SerTrpPheProValGlnGlyProAlaAspIleCysGlnCysCysAs

NLysGlyAspCysGlyThrProSerHisSerArgArgGlnProHisV

alMetSerGlnTrpSerArgSerValSer.